



ISO 9001
ISO 14001
BUREAU VERITAS
Certification Denmark A/S



Vapor Smoothing gives your 3D printed parts a surface finish comparable to injection molded parts

Achieve a **significant reduction in surface roughness** and **improve the mechanical properties** of your parts with vapor smoothing.

Vapor smoothing is a post-processing technique that creates a very smooth finish on the surfaces of 3D printed parts by exposing them to vapor in a controlled environment. This process results in a surface quality similar to injection molded parts with surface roughness values down to Ra 1.2 μm , compared to raw parts with an Ra value around 12 \pm 4 μm .

Beyond the improved appearance, vapor smoothing offers several mechanical advantages, including:

- Improved tensile strength and elongation at break
- Better chemical resistance
- Reduced friction for fluids and gasses
- Antibacterial properties and better cleaning options

These benefits make vapor smoothing suitable for a wide range of applications, especially in industries like medical and food where surface quality and hygiene are critical. The treated parts can even be used in direct contact with food and skin. The process uses biocompatible materials that meet strict health and safety standards.

While vapor smoothed polyamide (PA) parts will not experience a significant dimensional change, thermoplastic polyurethane (TPU) will undergo significant changes to the dimensions. CAD models designed for vapor smoothed TPU parts should therefore be adjusted accordingly.

We offer vapor smoothing for parts produced using various Powder Bed Fusion technologies, including:

- Selective Laser Sintering - SLS (not applicable to flame retardant materials)
- Selective Absorption Fusion - SAF
- Multi Jet Fusion - MJF

Depending on the parts shape and size, we can process parts with vapor smoothing with dimensions up to 385 x 585 x 385 mm.

Europe's largest digitally distributed manufacturing network with 100+ industrial 3D printers and a vast supply of technologies and materials



At Prototal, you can rest assured that your parts and products will see the day of light with the most optimal manufacturing method. We are one of the few providers offering injection molding, tool manufacturing, vacuum casting, as well as additive manufacturing in both polymer and metal.

Among our many departments across Europe, we are specialized with certificates for ISO 13485 (production of medical equipment) and EN 9100:2018 (production of parts for aerospace and defense industries). Moreover, we are one of the few certified partners of EOS and HP, the world-leading manufacturers of industrial 3D printers.

With over 30 years in the industry, we have accumulated valuable experience in producing parts for a wide range of industries including medical, automotive, industrial, electronics, robotics, energy, consumer goods, defense, and much more.

We believe that the best relationship between us and our customers is a close and trustworthy partnership. Therefore, we see knowledge sharing and consultation as the key for mutual success. You will always have a dedicated contact person at Prototal who knows your business and can provide you with the best possible advice on manufacturing.

And if you need production capacity outside of Denmark, we can meet your needs across Europe with departments in Norway, Sweden, Denmark, England, Scotland, Austria, and Italy.

So, how many parts do you need? **One or one million?**

Give us a call at +45 43 99 37 36, visit us at damvig.dk or write us an email at info@damvig.dk for more information.

Selective Laser Sintering

PA 1101, PA 2200, PA 3200 GF, PA 2210 FR, PA 603-CF, PA 640-GSL, TPU 88A & PA 12 (food contact)

Powder based manufacturing, delivering high dimensional accuracy. Suitable for prototypes and serial production.

Multi Jet Fusion

PA 12, PA 12 GB & PA 12 White

Powder based manufacturing, delivering high dimensional accuracy. Suitable for prototypes and serial production.

Selective Absorption Fusion

PA 11

Biobased powder manufacturing, delivering high dimensional accuracy. Suitable for prototypes and serial production.

Direct Metal Laser Sintering

AlSi10Mg (Aluminium), Ti6Al4v (Titanium) & CL20ES (Stainless Steel 316)

Powder based manufacturing, delivering high dimensional accuracy. Suitable for prototypes and niche serial production.

Stereolithography

Accura ClearVue, Accura Extreme, Accura SI & Accura HPC

Epoxy based manufacturing, delivering very high dimensional accuracy. Most suitable for prototyping.

Fused Deposition Modelling

Ultem, ABS-ESD7, Nylon 12 CF, PEEK CF & many other engineering materials

Extrusion process offering a wide variety of materials, but offers the least dimensional accuracy in the technology lineup. Most suitable for prototyping.

PolyJet

Digital Materials

Acrylic based process offering parts with multiple colors, different shores and a very high accuracy. Most suitable for prototyping.

